

REMARKS

This is in response to the Office Action dated May 8, 2003. New dependent claims 14-16 have been added. Thus, claims 1-2 and 6-16 are now pending.

Section 112 Rejection

Claims 1, 2 and 6-13 stand rejected under 35 U.S.C. Section 112, second paragraph, as being allegedly indefinite. This Section 112 rejection is respectfully traversed for at least the following reasons.

Claim 1, for example, requires "the top surface of the convex portion of the concave-convex surface of the first semiconductor substrate and the thin film insulator provided on the surface of the second semiconductor substrate contact each other *with no circuit or device element located therebetween.*" The italicized language is clearly stating that there is no circuit or device element located between (a) the thin film insulator of the second substrate, and (b) the first substrate having the concave-convex surface. Since the plain language of the claim states that there is no circuit or device element between the thin film insulator and the first substrate, it is irrelevant whether or not the thin film insulator itself is a circuit or device element. The claim language is clear and definite.

Claims 6-7 also clearly state that there is no circuit or device element between the insulator and the first substrate. Again, it is irrelevant whether or not the insulator itself is a circuit or device element. The claim language is clear and definite.

Art Rejections of Claim 1

Claim 1 stands rejected under 35 U.S.C. Section 102 as being allegedly anticipated by each of Fueki, Itoigawa, Satou and Ishio. These Section 102 rejections are respectfully traversed for at least the following reasons.

Claim 1 as amended requires that "the first semiconductor substrate and the second semiconductor substrate are brought together so that the top surface of the convex portion of the concave-convex surface of the first semiconductor substrate and the thin film insulator provided on the surface of the second semiconductor substrate contact each other with no circuit or device element located therebetween, to form a two-dimensional array of cavities in the semiconductor substrate device."

For example, see Figs. 1-2 of the instant application. Figs. 1-2 illustrate first semiconductor substrate 21 and second semiconductor substrate 24 brought together so that the top surface of the convex portion 21b of the concave-convex surface of the first semiconductor substrate 21 and thin film insulator 25 provided on the surface of the second semiconductor substrate 24 contact each other with no circuit or device element located therebetween. The resulting two-dimensional array of cavities in the semiconductor substrate device is shown in Fig. 2 (note: the phrase "two-dimensional array of cavities" means, as known in the art, that a plurality of cavities extend in both the x and y directions). The aforesaid quoted claimed structure is highly advantageous for a number of reasons. For example, a parasitic capacity to be generated between the substrate and element can be reduced so as to provide a substrate superior to a high

frequency property of a high frequency device and the like because air in the cavities becomes a low dielectric when metal wirings, passive elements and/or active elements are provided on the second substrate.

The cited art fails to disclose or suggest the aforesaid underlined aspects of claim 1. Each of Fueki, Itoigawa, Satou and Ishio merely relate to sensors and thus fail to disclose or suggest the claimed *two-dimensional array of cavities* required by claim 1.

Fueki, for example, merely discloses a *single* cavity in a substrate. Furthermore, due to the fact that Fueki simply discloses a single cavity, there is no "convex" portion – just a concave portion. Thus, it can be seen that Fueki fails to disclose or suggest both the (a) two-dimensional array of cavities, and (b) convex portion required by claim 1. Moreover, it is clear that since Fueki relates to a sensor, one of ordinary skill in the art would never have modified the device to cause it to include a plurality of cavities because the sensor would no longer function properly.

Itoigawa, Bang and Satou also merely disclose sensors with single cavities. Thus, each of these references clearly fails to disclose or suggest both the (a) two-dimensional array of cavities, and (b) convex portion required by claim 1. Moreover, while Ishio discloses two cavities in a substrate, they are linearly aligned. Thus, Ishio also fails to disclose or suggest the two-dimensional array of cavities required by claim 1. Furthermore, in Ishio the allegedly convex portion 23 does *not* contact the alleged insulator of the opposite substrate, thereby again teaching directly away from the invention of claim 1.

For at least the foregoing reasons, it can be seen that the cited art fails to disclose or suggest the invention of amended claim 1.

Claims 14-16

New claims 14-16 require that the two-dimensional array of cavities serve as respective low dielectric constant portions so that parasitic capacitance generated between the first substrate and circuit elements on the second substrate is reduced. For example, see the instant specification from page 20, line 20, to page 21, line 9. The cited art fails to disclose or suggest the aforesaid aspects of claims 14-16. Instead, the cavities of the sensors of the cited art are active elements in the art's sensors, and do not reduce parasitic capacitance as called for by these claims.

Claims 6-7

As explained above, Fueki, Itoigawa, Bang and Satou merely disclose sensors with single cavities. Thus, each of these references clearly fails to disclose or suggest both the (a) two-dimensional array of cavities, and (b) convex portion required by claims 6-7. Moreover, while Ishio discloses two cavities in a substrate, they are linearly aligned. Thus, Ishio also fails to disclose or suggest the two-dimensional array of cavities required by claims 6-7. Furthermore, in Ishio the allegedly convex portion 23 does *not* contact the alleged insulator of the opposite substrate, thereby again teaching directly away from the inventions of claims 6-7.

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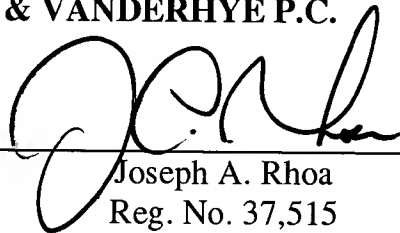
Conclusion

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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